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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/707,864

01/19/2004

Robert T. Froebel

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EXAMINER

AKANBI, ISIAKA O

ART UNIT

PAPER NUMBER

2886

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

02/08/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/707,864

Applicant(s)

FROEBEL ET AL.

Examiner

Isiaka O. Akanbi

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 2,3,6,8 and 9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4,5,7 and 10-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Amendment

The amendment file 27 July 2006 has been entered into this application. Claims 2-3, 6 and 8-9 are cancelled.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4-5, 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida (2001/0024278 A1) in view of the Applicant's Admitted Prior Art (A.P.A).

Claims 1, 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida in view of the Applicant's Admitted Prior Art (A.P.A). The reference of Yoshida teaches of a system of alignment marks formed on a substrate, the substrate to be used in a photolithographic system having first and second alignment signal sources (10/13) and the alignment marks and signal detectors (14/16/18) of claim 1, comprising a first region (14/16/18) configured to provide a first signal to the first signal detector (14/16/18) in response to the first alignment signal source and a second region (10/13) configured to provide a second signal to the second signal detector (14/16/18) in response to the second alignment signal source, wherein the first signal determines multiple first coordinates of an aligned position of the substrate, the second signal determines multiple second coordinates of an aligned position of the substrate, and the substrate is in a coarse aligned position with the photolithographic system when one of the multiple first coordinates and one of the multiple second coordinates correspond to a maximum received signal strength at the first signal detector and the second signal detector, respectively (fig. 1)(page 5, par. 0064), wherein the first region and the second region are an X mark diffraction pattern and a Y mark diffraction pattern, respectively (fig. 2)(page 5, par. 0064) and a segment of a Y mark in the X mark and the Y mark diffraction pattern further comprises a segment of an X mark in the Y mark (fig. 2 and fig. 16)(page 5, par.

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0064-0069). The reference of Yoshida is silent regarding a segment of a Y mark and a segment of the X mark has been removed, each segment removed corresponds to regions of the X mark and Y mark that cause false alignments, replacing segment of the Y mark and segment of the X mark that are removed by segments of a different orientation than the X mark and the Y mark (i.e. located from $\pm 45^\circ$ to $\pm 90^\circ$ relative to the X mark and the Y mark). The applicant discloses (page 1, par. 0004) that removal of alignment marks (i.e. X and Y) is a well known in the art (coarse/rough alignment). Therefore it would have been obvious to one having ordinary skill in the art at the time of invention to incorporate the teachings of Yoshida in conjunction with applicant indication of feature to design/provide a segment of a Y mark and a segment of the X mark that has been removed and each segment removed corresponds to regions of the X mark and Y mark that cause false alignments to meet the terms of the claims for the purpose of potentially removing large errors during coarse alignment to enables fine alignment systems to efficiently capture alignment marks on the substrate during fine alignment process with accuracy. (see In Ex parte McGaughey, 6 USPQ2d 1334, 1337 (Bd. Pat. App. & Int. 1988). Further it would have been obvious to one having ordinary skill in the art at the time of invention to replaced the segment of the Y mark and segment of the X mark that are removed by segments of a different orientation than the X mark and the Y mark for the purpose of performing fine alignment/exposure process with accuracy.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 11 -16 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoshida (2001/0024278 A1).

As regard to claims 11 and 14, Yoshida discloses a method for searching and aligning alignment marks formed on a substrate in a diffraction pattern alignment system comprising of the following:

locating a segment of a Y mark in an X mark, illuminating the segment of a Y mark in an X mark with a Y-alignment signal source, measuring received signal strength of the diffraction pattern at a first signal detector, moving the X mark in an X-direction, repeating the illuminating, measuring and moving until the received signal strength of the diffraction pattern at the first signal detector is zero, determining a location of an approximate center of the segment of a Y mark in an X mark as a maximum of the measured received signal strength, illuminating the X mark with the X-alignment signal source, detecting multiple aligned positions received at a second signal detector as a result of illuminating the X mark, searching the multiple aligned positions detected for a single aligned position in the X direction that corresponds to the location of the approximate center of the segment of a Y mark in an X mark and selecting an aligned position of the X mark in the X-direction in accordance with the single aligned position that corresponds to the location of the approximate center of a Y mark in an X mark (fig. 1 and fig. 16)(page 8, par. 0094-0096 and 0170)(page 1, par. 0009)(page 2, par. 0017-0018 and par. 0020).

As to claims 12, Yoshida discloses wherein moving the X mark in an X-direction is performed by moving the X mark in relation to the Y-alignment signal source by a specified amount in the X-direction until the Y-alignment signal source has passed the segment of a Y mark in an X mark (fig. 1).

As to claims 13 and 16, Yoshida discloses wherein selecting the aligned position occurs when the maximum of the received signal strength is greater than or equal to a predetermined threshold (page 2, par. 0017-0018).

As to claim 15, Yoshida discloses wherein moving the Y mark in the Y-direction is performed by moving the Y mark in relation to the X-alignment signal source by a specified amount in the Y-direction until the X-alignment signal source has passed the segment of an X mark in a Y mark (fig. 1).

Additional Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The references listed in the attached form PTO-892 teach of other prior art system of alignment marks formed on a substrate that may anticipate or obviate the claims of the applicant's invention.

Response to Arguments

Applicant's arguments/remarks, see pages 7-9, filed 08 May 2006, with respect to the rejection(s) of claim(s) 1, 4-5, 7 and 10 under 35 U.S.C. 102(b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of claim amendment. In response to Applicant's arguments to claims 11 and 14, see page 9, with respect to cited references as neither described/suggest selecting an aligned position of the Y mark in the Y- direction in accordance with the single aligned position that corresponds to the location of the approximate center of an X mark in a Y mark, the examiner disagrees with the applicant arguments, that the reference of Yoshida shows (fig. 16) selecting an aligned position of the Y mark in the Y- direction in accordance with the single aligned position that corresponds to the location of the approximate center of an X mark in a Y mark, since the X and Y are symbol/label that indicate arbitrary direction (i.e. orthogonal) and does not define structurally the alignment mark.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Fax/Telephone Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Isiaka Akanbi whose telephone number is (571) 272-8658. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m.

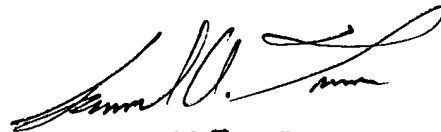
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley Jr. can be reached on (571) 272-2059. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Isiaka Akanbi

January 31, 2007

A handwritten signature in black ink, appearing to read 'Samuel A. Turner', is written over a horizontal line.

Samuel A. Turner
Primary Examiner